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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,772	10/03/2003	Sheikh A. Akbar	OSU 2-206	3418
2555	7590	08/25/2006	EXAMINER	
KREMBLAS, FOSTER, PHILLIPS & POLLICK 7632 SLATE RIDGE BOULEVARD REYNOLDSBURG, OH 43068			LOPEZ, CARLOS N	
			ART UNIT	PAPER NUMBER
			1731	

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/678,772	Applicant(s) AKBAR ET AL.	
	Examiner Carlos Lopez	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 17,30 and 34-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16,18-29 and 31-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/26/05, 6/14/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-16, 18-29, 31-33, drawn to method of making a ceramic body, classified in class 264, subclass 646.
- II. Claims 17,30,34-39, drawn to a ceramic body, classified in class 428, subclass 128.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). The product as claimed can be made by another and materially different process such as extrusion.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

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Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Jason Foster on 8/16/06 a provisional election was made without traverse to prosecute the invention of group I, claims 1-16, 18-29, 31-33. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17, 30, 34-39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16, 18-29, 31-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase used in step c to refer to the ceramic body makes it unclear to which ceramic body it is referring. Is it the ceramic body that was treated after step a or step b?

In claims 12-14, the phrase "the step of heat treating" lacks antecedent basis. Additionally, the claims 14-15 recite "a flow rate" but fail note the flow rate of what substance it is referring.

For examination purposes, the solid body referred in step c will be read as referring to the either solid body resulting from step a or b.

As for claims 12-13, the claimed step of heat treating will be read as referring to step c.

As for claims 14-15, the flow rate will be read as referring to the flow rate noted in claim 3.

#### ***Information Disclosure Statement***

The information disclosure statement filed 9/26/05 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

#### ***Claim Rejections - 35 USC § 103***

Claims 1,3-5,9-11,14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avery (US 5,205,991).

Avery et al discloses a method of making ceramic material for catalytic

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converters. The method comprises extruding ceramic material using extruder 13 to form logs that are subsequently cut, dried and fired. The disclosed extrusion of the ceramic material to form a log is deemed as the claimed compression of ceramic particulate to form a log. The claimed exposing the solid body/log to a reducing environment is deemed as providing a stream of air on the log as noted in Col. 2, lines 54ff. In view that solid body of ceramic material is exposed to a reducing environment at a temperature set forth in table I of Avery and a predetermined time, a person of ordinary skill in the art would reasonably conclude that nanostructures would be formed on the surface of the ceramic body. In particular the particles that provide a surface roughness to the ceramic body is deemed as the "nanostructures" on the exterior of the ceramic body.

In regards to step B, Avery as noted above fires the solid body, which is deemed as the claimed sintering.

As for claims 3, 9-11, the atmosphere provided by Avery is humidified air which comprises water and hydrogen

As for claim 5, the pressure exerted on the ceramic material would depend on the viscosity of ceramic, material and the desired production rate. Hence, the claimed pressure is an obvious process parameter to control the production rate of the ceramic bodies or adjustment to the viscosity of the ceramic material.

As for claims 14-15, the claimed flow rates are obvious process parameters to provide the necessary humidification of the log within a predetermined time period.

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As for claim 16, the claimed formed product is deemed as being formed in view that Avery mirrors the claimed process steps.

Claims 2, 6-8, 18-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avery (US 5,205,991) as applied above, and in view of Wu (US 5,538,681). Avery is silent disclosing the use of titania or the sintering temperatures. However, Wu notes of firing a ceramic at a sintering temperature range of 1000 °C to 1400°C, see Col. 9 lines 1ff, and using titania as the ceramic material, see Col. 4, lines 7ff. At the time the invention was made it would have been obvious to a person of ordinary skill in the art to have sintered the ceramic body of Avery within known sintering temperatures and known materials to make the ceramic body as noted by Wu in order to provide catalytic converters.

As for claims 8 and 22, Wu notes that the sintering is done for about 2 to 4 hours, the claimed additional 2 hour sintering time would not provide an unexpected result and would be obvious to a person of ordinary skill in the art to have increased the sintering time in order to assure that the ceramic body is fully sintered.

As for claim 19, in view that the gas being used is air, which has its majority component comprising a nitrogen an inert gas, mirroring the invention recited in claim 18, it would be obvious to a person of ordinary skill in the art to have expected nanofibers to be formed on the ceramic body,

As for claim 20, the pressure exerted on the ceramic material would depend on the viscosity of ceramic, material and the desired production rate. Hence, the claimed

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pressure is an obvious process parameter to control the production rate of the ceramic bodies or adjustment to the viscosity of the ceramic material.

As for claims 23-25, the atmosphere provided by Avery is humidified air which comprises water, hydrogen, and nitrogen.

As for claims 26-27, the claimed flow rates are obvious process parameters to provide the necessary humidification of the log within a predetermined time period.

***Allowable Subject Matter***

Claims 12-13,28-29 and 31-33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the cited prior art fails to disclose or reasonably suggest a method of making a ceramic body comprising the claimed compressing and sintering in combination with heat treating the ceramic body at the claimed temperature. The cited prior art only disclose humidification of the ceramic body at a temperature of 74 °F to 104 °F, see Avery Table I.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references in PTO 892 and not applied in the above rejections have been cited to show the state of the art.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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